

# **Are Directors More Likely to Relinquish Their Riskiest Directorships after the Crisis?**

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PRELIMINARY DRAFT  
PLEASE DO NOT CIRCULATE

December 2015

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## **Are Directors More Likely to Relinquish Their Riskiest Directorships after the Crisis?**

**Abstract:** This paper documents that directors exhibit a strong tendency to resign from their riskiest directorships. This tendency is significantly more pronounced in the period subsequent to the Financial Crisis. I also show that this pattern is consistent with riskier directorships becoming more costly for directors after the crisis, as documented by a stronger association between firm risk and the number of withheld votes, the number of board meetings, and the probability of shareholder litigation. Finally, I provide evidence that, after such departures, firms experience decreases in performance and risk-taking. Overall, my results suggest that (i) firm risk is costly for corporate directors and that (ii) the post-crisis emphasis on risk oversight has heightened the costs of serving on risky boards, thereby inducing board turnover with material consequences for the firms experiencing it.

*Keywords:* directorship risk; director turnover; risk oversight; corporate governance; risk management; financial crisis

*JEL Classification:* G32, G34, K22

## **1. Introduction**

In the aftermath of the financial crisis, the public and political perception that excessive risk-taking was central to the breakdown of the financial markets has fueled an extensive legislative, regulatory, and even judicial focus on risk oversight. Prominent legislative actions include the Wall Street Reform and Consumer Protection Act, which requires certain financial institutions to form independent board-level risk committees responsible for the establishment and evaluation of risk management practices. Regarding regulation, the Securities and Exchange Commission (SEC) has introduced disclosure rules that require discussion in proxy statements of the board's role in overseeing and managing risk and the risk implications of a company's compensation policies. Furthermore, the SEC has liberalized its approach to shareholder proxy proposals addressing risk oversight, and risk management has received heightened focus by shareholder activists, proxy advisors, and credit rating agencies. Finally, some directors have been sued under allegations of breach of fiduciary duties by not properly monitoring and managing business risks. While finally dismissed, these lawsuits introduce the possibility that courts may apply new standards, or interpret existing ones, that increase board responsibility for risk management.

The purpose of this paper is to further our understanding of the economic consequences of this emphasis on risk oversight in the post-crisis period by examining the effect of these institutional changes on director turnover. Critically, the emphasis on risk oversight could have increased the cost of serving on boards, especially on boards of riskier firms, thereby making these firms less attractive for directors. Thus, it is plausible that, when adjusting their directorship portfolio, directors have become more likely to resign from their riskiest directorships. This paper empirically addresses this issue by testing whether, conditional on

being determined to leave one directorship, directors have a tendency to relinquish their riskiest directorships, and whether this tendency is more pronounced in the post-crisis period.<sup>1</sup>

Serving on risky firms could be costly for directors for several reasons. First, risk oversight involves effort and time. The effort to monitor corporate risk management could be substantial given the highly specific and technical nature of some risk management activities. Second, firm risk translates into volatility in directors' equity holdings and performance-based cash payments. In most cases, this risk cannot be perfectly diversified away. Third, litigation and other actions related to shareholder discontent are likely to be more frequent among more volatile directorships.<sup>2</sup> In addition to the potential civil penalties, these actions could impose significant reputational and emotional costs on directors, as well as the opportunity costs related to the time and attention demanded by lawsuits and public criticism.

However, other reasons suggest that these costs could not be substantial enough to outweigh the significant personal benefits of holding a board position.<sup>3</sup> To begin with, director compensation is modest compared to executive pay, and thus the average effect of firm risk on a director's wealth might not be large enough to induce the director to leave the firm. Also, because many directors are protected by D&O insurance, out-of-pocket payments are extremely rare among independent board members (Black et al., 2006). Finally, the additional effort and the potential non-monetary costs (e.g., reputational losses, emotional costs, etc.) associated with

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<sup>1</sup> Note that this hypothesis is fundamentally different from testing an association between firm risk and director turnover at the firm level. Moreover, such test would not be able to disentangle whether the director turnover is driven by directors' preferences or by firm-specific reasons.

<sup>2</sup> Litigation and other actions related to shareholder discontent are usually associated with negative outcomes. In contrast, shareholders are usually passive after positive outcomes. To the extent that riskier firms experience more extreme outcomes (both positive and negative), litigation and other actions related to shareholder discontent are likely to be more prevalent among riskier firms.

<sup>3</sup> See Fama and Jensen (1983) for an explanation of these benefits.

directorship risk might not be substantial enough to affect directors' preferences across directorships.

The hypothesis that directors are more likely to leave from their riskiest directorships is supported by survey evidence suggesting that risk considerations have significant weight on directors' decision to accept and/or depart from board positions. For example, 8% of the directors surveyed by the PwC's 2009 annual Board of Directors Survey expressed that they had resigned or seriously thought about resigning from one of the boards they serve due to personal liability and reputational concerns, and 46% of the directors expressed that they had turned down a board position because the risk was too high (PwC, 2009).

Survey evidence also suggests that, in the post-crisis period, directors feel increasingly at risk. According to a survey conducted by PwC shortly after the financial crisis, 69% of directors believe that the liability risk of serving on boards increased from previous year. In contrast, only 35% responded affirmatively to this question in a similar survey conducted before the outset of the crisis (PwC, 2009). Consistent with this perception, the average total limits of director and officer (D&O) insurance have increased substantially in the post-crisis period (Towers Watson, 2006-2012). As shown in Figure 1, these limits have risen from less than 40 million dollars in the period between 2006 and 2008 to more than 120 million dollars in the years after 2009. This dramatic change is unlikely to be driven by inflation, salary increases, or insurance prices.

I empirically examine whether directors are more likely to relinquish their riskiest directorships using a comprehensive sample of directors holding a portfolio of US public firms from 2005 to 2013. Using stock return volatility as measure of directorship risk, I find strong evidence that, conditional on departing from one directorship, directors are more likely to relinquish the riskiest directorship in their portfolio.

The result that directors are more likely to relinquish their riskiest directorships remains robust when conducting demanding tests to mitigate concerns regarding self-selection and omitted variables. First, I model directors' decision to leave one directorship for personal reasons (reasons unrelated to the specific firms in their directorship portfolio) using a Heckman selection model. Second, I use a comprehensive panel of director-firm-year observations, including non-departing directors and private directorships. Results remain unaltered when including director-year, firm-year, and director-firm fixed effects, suggesting that my inferences are unlikely to be confounded by unobserved variation in director- and firm-specific drivers of director turnover.

I further identify the effect of directorship risk on director turnover by exploiting the exogenous increase in the cost of serving on risky boards introduced by the post-crisis institutional changes related to risk oversight. First, I empirically validate the claim that the recent emphasis on risk oversight has increased the costs of serving on risky directorships. Indeed, the association between firm volatility and the costs of serving on boards of public firms (measured by the percentage of withheld votes, the number of board meetings, and the probability of class action lawsuits) becomes significantly stronger after the Financial Crisis. Second, consistent with the notion that directors bear a cost from serving on risky directorships and that this cost has increased after the Financial Crisis, I find that departing directors' probability of resigning from their riskiest directorships more than doubles in the years immediately after the Financial Crisis.

Finally, I explore the economic consequences of directors' departure from their riskiest directorships. Specifically, I compare subsequent changes in profitability and risk-taking policies across the portfolio of directorships held by departing directors at the start of the year. Departures from riskiest directorships are compared to two control groups, namely departures

from non-riskiest directorships and non-departures from riskiest directorships. I find that, compared to the observations in the control groups, departures from riskiest directorships are followed by more pronounced decreases in profitability, stock return volatility, and R&D investment. These patterns are most pronounced in the two years following the financial crisis, i.e., 2009 and 2010.

Overall, the results suggest that directorship risk is important to understand director turnover patterns. Crucially, my evidence is consistent with the notion that the post-crisis institutional changes related to risk oversight have increased significantly the cost of serving on risky boards. Moreover, the results suggest that firms experiencing departures from riskiest directorships become more conservative in their risk-taking policies and less profitable. To the extent that such departures appear to have material consequences, my results highlight the need to carefully consider the potential trade-offs associated with the recent emphasis on board risk oversight.

My findings make several important contributions to the literature. First, I add to the literature on the determinants of voluntary director resignations. This is important because, although there is an extensive literature on executive turnover, there is no well-developed body of research on director turnover (e.g., Larcker and Tayan, 2011), and most of the existing literature on director turnover generally focuses on director departures around significant negative events or internal conflicts (i.e., departures that are more likely to be forced or induced).<sup>4</sup> This paper contributes to this literature by proposing that directorship risk is an

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<sup>4</sup> In particular, Yermack (2004) shows that director turnover often follows poor firm performance. Shrinivasan (2005) and Arthaud-Day et al. (2006) document that director and audit committee members are more likely to turn over if the company experiences a restatement. The resignations analyzed in these papers are interpreted as an attempt by the restating firms to repair the reputational damage caused by the accounting irregularity. Also, the evidence in Agrawal and Chen (2011) suggests that some director resignations are driven by conflicts with management or other directors related to governance issues or disagreements over strategy or financing decisions. Finally, Fahlenbrach et al. (2014) show that in some cases directors leave in anticipation of upcoming adverse news

important (yet unexplored) determinant of voluntary board resignations. Moreover, the notion that a director's decision to resign from a directorship may hinge on the *relative* characteristics of the firms in her directorship portfolio (rather than on the *absolute* characteristics of those firms) is absent from previous empirical literature. One notable exception is Masulis and Mobbs (2013), who show that directors are less willing to relinquish their relatively more prestigious directorships. This paper extends the findings in Masulis and Mobbs (2013) by showing that, in addition to prestige, directorship risk is an important determinant of directors' preferences across their directorship portfolio.

Second, my study contributes to the literature examining the effect of regulation on corporate boards. In the context of the Sarbanes-Oxley Act (SOX), Linck et al. (2010) provide evidence that the level of director compensation increases significantly after SOX, probably to compensate directors for the increased regulatory and public pressure. Also in the context of SOX, Duchin et al. (2010) find that for firms in which outside directors face high information acquisition costs, performance falls after the forced addition of outside directors after SOX. My paper adds to these studies in at least two dimensions. First, neither Linck et al. (2010) nor Duchin et al. (2010) study how regulation affects voluntary director departures. Second, I study a regulatory change (i.e., the post-crisis regulation) that is fundamentally different from SOX along several dimensions but most notably in that, while SOX emphasized board independence and was focused on financial reporting, the post-crisis regulation was more concerned about risk oversight.

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such as poor performance, accounting irregularities or shareholder litigation. Note that, unlike Agrawal and Chen (2011) and Fahlenbrach et al. (2014), I document that directors leave board positions not only because of *already existing* problems, but also because of *potential* problems (i.e., problems that may never occur or materialize).

Finally, my study provides novel evidence on the board's influence on corporate risk-taking. Although prior literature has examined the effect of top managers on firms' risk-taking behavior (e.g., Coles et al., 2006), there is little empirical evidence on the effect of directors on corporate risk-taking. One prominent exception is Ellul and Yerramilli (2012), who study the role of banks' risk control structures during the Financial Crisis. They find that banks with stronger risk controls (including some board-level controls) experienced lower risk during the Financial Crisis. My paper extends Ellul and Yerramilli (2012) by documenting that the effect of board risk oversight is not limited to banks or financial firms. But perhaps more importantly, this study develops this literature by showing that the departure of individual board members for reasons unrelated to the firm can result in firms adopting more conservative risk-taking strategies.

The remainder of the paper proceeds as follows. I provide relevant background information in Section 2. I describe and characterize the sample in Section 3. Section 4 contains the results from the analysis of director departures. In Section 5 presents the results of analyzing director departures in the periods around the end of the Financial Crisis. The economic consequences of board departures are analyzed in Section 6. Section 7 describes robustness tests and analyzes alternative explanations. Section 8 concludes.

## **2. The institutional emphasis on risk oversight after the Financial Crisis**

In the years following the Financial Crisis, the perception that boards should monitor corporate risks more closely has led to a substantial body of legislation and regulation relating to the risk management responsibilities of corporate officers and directors. Following the *Troubled Asset Relief Program* (TARP) contained in the Emergency Economic Stabilization Act of 2008,

some U.S. congressmen and senators introduced legislation with provisions focused on risk management. This legislation included the *Shareholder Bill of Rights Act of 2009* and the *Corporate Governance Reform Act of 2009*. This proposed legislation would require that, among other things, all public companies establish a risk committee composed entirely of independent directors. Although these bills were not passed in their initial form, their content was included with some modifications in the financial reform act of 2010. In addition to other risk management provisions, the *Dodd-Frank Wall Street Reform and Consumer Protection Act* (Dodd-Frank Act) required nonbank financial companies supervised by the Board of Governors and certain bank holding companies to establish a risk committee formed by independent directors and including at least one expert “having experience in identifying, assessing, and managing risk exposures of large, complex firms”.<sup>5</sup>

In addition to this legislation, in 2009 the Securities and Exchange Commission adopted rules requiring public companies to disclose the risks arising from their compensation policies and practices to the extent that these policies and practices were reasonably likely to have a material adverse effect on the company. As envisioned by the SEC, this new disclosure was intended to help investors identify whether a company is employing a system of incentives that can lead to excessive or inappropriate risk-taking by its employees, as well as disclose any specific pay policies or practices that were likely to expose the company to material risk. The new rules also introduced a new disclosure requirement in proxy statements on “the board’s role on risk oversight.” Disclosure about the board’s approach to the company’s risk management process would address questions such as “whether the persons who oversee risk management report directly to the board as a whole, to a committee, such as the audit committee, or to one of the other

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<sup>5</sup> <http://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>

standing committees of the board; and whether and how the board, or board committee, monitors risk.”<sup>6</sup>

Some stock exchanges have also joined this regulatory emphasis on risk management by including explicit risk oversight requirements for listed companies. For example, in November 2009, the New York Stock Exchange amended its listing rules adding risk oversight to the responsibilities of the audit committee (regardless of the existence of a separated risk committee or subcommittee), and including risk management among the internal control systems that all listed companies should have.<sup>7</sup>

Also recently, plaintiffs in some lawsuits have alleged a breach in fiduciary duty on the grounds of risk management failures. For example, *In re Citigroup Inc. Shareholder Derivative Litigation*, it was alleged that the defendant directors of Citigroup had breached their fiduciary duties by not properly monitoring and managing the business risks, and by ignoring alleged “red flags” that consisted primarily of press reports and events indicating worsening market conditions.<sup>8</sup> *In re The Goldman Sachs Group, Inc. Shareholder Litigation*, claims against directors of Goldman Sachs were based on allegations that they failed to properly oversee the company’s alleged excessive risk taking and inadequate hedging.<sup>9</sup> Although in both cases claims were dismissed by the Delaware courts, recent state law jurisprudence implies that failure to ensure that the risks faced by the company are understood and managed in the best interest of shareholders could be considered a breach of duty.<sup>10</sup> This jurisprudence builds upon a growing

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<sup>6</sup> See Final Rule on “Proxy Disclosure Enhancements” (<http://www.sec.gov/rules/final/2009/33-9089.pdf>).

<sup>7</sup> Specifically, the NYSE rules require that an audit committee “discuss guidelines and policies to govern the process by which risk assessment and management is undertaken” (see Section 303A of the NYSE Listing Manual).

<sup>8</sup> <http://courts.delaware.gov/opinions/download.aspx?ID=118110>

<sup>9</sup> <http://courts.delaware.gov/opinions/download.aspx?ID=161650>

<sup>10</sup> The Business Judgment Rule is often cited as the main standard of review of director conduct by Delaware courts. *In re Caremark International Inc. Derivative Litigation*, 698 A.2d 959, 971 (Del. Ch. 1996) the Delaware Chancery Court stated that director liability for a failure of board oversight required a sustained or systemic failure of the board to exercise oversight, such as an utter failure to assure a reasonable information and reporting system exists,

body of law and regulation related to issues such as fraudulent conduct by employees, product liability, health and safety, and environmental compliance (e.g., Sarbanes-Oxley, or the Federal Sentencing Guidelines).

The post-crisis emphasis on risk oversight is not limited to legislative, regulatory, and judicial actions, nor is it to financial firms. For example, recent industry-specific guidance and general best practices manuals support the notion that risk management and governance should be linked.<sup>11</sup> Moreover, credit rating agencies have recently started to incorporate enterprise risk management criteria in their ratings.<sup>12</sup> According to public disclosures, an increasing number of firms have recently implemented formal risk-management processes such as Enterprise Risk Management (ERM) programs. Simultaneously, there has also been an increase in the media attention to risk management failures,<sup>13</sup> as well as an emphasis on ERM programs, risk-related consulting services, software, courses, and research centers.<sup>14</sup>

Risk management has also been the focus of recent shareholder activism, especially after the SEC reexamined its framework to analyze shareholder proxy proposals addressing risk oversight.<sup>15</sup> Finally, Institutional Shareholder Services (the proxy advisory firm with the largest

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and noted that this was a “demanding test”. However, more recent jurisprudence revises the definition of the duty of good faith (in re Walt Disney Co. Derivative Litig., Cons. C.A. No. 15452, 2005 Del. Ch. LEXIS 113 (Del Ch. Aug. 9, 2005)). While upholding the validity of the Business Judgment Rule, Chancellor Chandler underscored the importance of good faith in the performance of corporate duties and stated that directors and officers are expected to fully understand current best practices (such as risk management) as well as ensure that business decisions are taken in light of widely recognized corporate governance standards.

<sup>11</sup> See, for example, the Committee of Sponsoring Organizations of the Treadway Commission (COSO), several guidelines specifically oriented to the banking industry, other industry-specific guidelines (for utilities, ports, nuclear materials management, and pharmaceuticals), and corporate governance guidelines of foreign jurisdictions such as the Turnbull Report in the UK.

<sup>12</sup> [http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/ratings\\_erm](http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/ratings_erm)

<sup>13</sup> British Petroleum, Airbus, and Siemens are some examples of recent failures in risk management in major non-financial companies that have drawn significant media attention.

<sup>14</sup> A casual search on Factiva reveals a steady increase in the number of times the words "Enterprise Risk Management (ERM)" appears in the news (185 hits in 2000, 1,358 hits in 2006, and 2,771 hits in 2009). In terms of public disclosures, ERM appears in 67 SEC filings in 2000, 768 SEC filings in 2006 and 1,391 SEC filings in 2009 (usually proxy statements, 10-K or 10-Q reports).

<sup>15</sup> For example, see SEC Staff Legal Bulletin No. 14E (CF) on shareholder proposals.

market share) now includes specific references to risk oversight as part of its criteria to recommend withhold votes in uncontested director elections.

### **3. Sample and measurement choices**

#### *3.1. Sample selection*

I obtain my primary sample by collecting information on board memberships from the BoardEx database from 2005 to 2013. BoardEx provides detailed biographical profiles of executives and directors of public and private firms in the U.S. and the rest of the world from year 2000, which include information on dates of appointment and departure.<sup>16</sup>

My empirical tests require accounting and stock price information obtained, respectively, from Compustat and CRSP. I exclude private boards because in the US there is no public information available about these firms' characteristics. I also exclude delisting firms because director turnover in these firms is likely to be driven by factors other than directors' preferences. To be able to test directorship portfolio effects, I focus on directors that serve on at least two US public boards meeting the previous requirements with non-missing CRSP data at the start of each year. Executive directors are also excluded because the determinants of executive turnover are not necessarily the same as those of director turnover. I further focus on directors that depart from at least one directorship in a given year (to whom I refer as "Departing directors"). This sample requirements result in 2,965 director-year observations, 5,989 firm-year observations, and 7,491 director-firm-year observations.<sup>17</sup>

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<sup>16</sup> BoardEx's information sources include firms' filings with the SEC and press releases, corporate websites, and stock exchanges, supplemented by press sources such as the *Wall Street Journal* and the *Financial Times*.

<sup>17</sup> I also exclude from the sample directors that depart from *all* of their directorships because those observations do not allow me to test directorship portfolio effects.

### 3.2. Sample characteristics

Table 1, Panel A, reports descriptive statistics for the main characteristics of the sample directorships. *Volatility* is the firm's annual stock return volatility measured using daily data. *MV* is the firm's market value of equity. *Return* is the firm's return compounded over one year using daily data. *Leverage* is the leverage ratio of the firm, computed as total debt scaled by total assets. *BM* is the firm's book-to-market ratio. *ROA* is the firm's return on assets, computed as operating cash-flow scaled by total assets.

As shown in Panels B, the industry distribution of the sample firms is similar for departing directors' relinquished and retained directorships, and also similar to that of non-departing directors' directorships. Regarding firm characteristics, Table 1, Panel A, reveals that the directorships relinquished by departing directors exhibit significantly higher levels of *Volatility* and *BM* than the retained directorships. In contrast, *Return* and *ROA* are significantly lower for relinquished directorships. *Size* is similar in both subsamples.

## 4. Board departures

### 4.1. Are departing directors more likely to relinquish their riskiest directorships?

Figure 2 presents a univariate analysis of directors' tendency to relinquish their riskiest directorships. Specifically, Figure 2 plots the percentage of departing directors leaving their riskiest directorship in each year of the sample period and the difference in stock return volatility between departing directors' relinquished and retained directorships. To provide a benchmark for the probability of relinquishing the riskiest directorship, I compute the annual percentage of departing directors leaving their riskiest directorship by chance (that is, without considering directors' preferences). I do that by randomizing departing directors' selection of one

directorship among those in their portfolio. That is, I randomly code as “relinquished” one of the directorships held by each director in the year of departure. As shown in Figure 2, the tendency to depart from the riskiest directorship (blue continuous line) is on average higher than the odds of leaving the riskiest directorship by chance (red dotted line). The gap between the two lines is more pronounced in the years after the financial crisis, especially in the two first years of the post-crisis period (i.e., 2009 and 2010).

To test whether the pattern in Figure 2 is robust to multivariate analysis, I estimate the following OLS model:<sup>18</sup>

$$\textit{Relinquished\_Directorship} = \alpha_0 + \alpha_1 \textit{Riskiest\_Directorship} + \theta_1 \textit{Controls} + \varepsilon, \quad (1)$$

*Relinquished\_Directorship* is an indicator variable that equals one if the director departs from the firm’s board that year, and zero otherwise. *Riskiest\_Directorship* is an indicator variable that equals one if the firm is the directorship with highest *Volatility* among the directorships held by the director at the start of the year, and zero otherwise. *Volatility* is as previously defined and measured over the calendar year prior to the year of the director’s departure.

Equation (1) includes five sets of controls. First, I include controls for other directorship characteristics expressed in relative terms (i.e., relative to the firms in the directors’ portfolio). *Relative\_Size* is the fractional rank of *Size* by director and year (that is, I rank the directorships held by each director at the start of the year based on *Size*). *Relative\_Return* is the fractional rank of *Return* by director and year. *Size* and *Return* are as previously defined and measured over the prior calendar year. Second, I include controls for directorship characteristics in absolute terms

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<sup>18</sup> Inferences are unchanged when equation (1) is estimated using probit or logit models. I present results using OLS because the use of fixed effects estimators in nonlinear models such as logit and probit suffers from the “incidental parameter problem”; i.e., it produces upwardly biased estimates (Neyman and Scott, 1948).

(i.e., the unranked values of *Volatility*, *Size*, and *Return*) to ensure that the coefficient  $\alpha_1$  captures a directorship portfolio effect rather than a general association between director turnover and firm volatility (or some other firm characteristic).

Third, I include in equation (1) three variables aimed at capturing whether the firm is currently navigating through problems and/or significant changes. I do this because, rather than leaving the firm motivated by concerns about what *might occur* in the future (i.e., risk), a director could relinquish a directorship because that board is *already* more problematic than her other directorships. Moreover, directors at firms in difficult situations or firms involved in fraud are sometimes pressured to leave their seats (e.g., Shrinivasan, 2005). Specifically, I include *Litigation*, defined as one if the firm has been subject to class action suits during the prior calendar year, and zero otherwise. I include this variable because lawsuits are likely to increase directors' personal costs (litigation usually involves additional work and sometimes also reputational losses and civil penalties). *More\_Meetings* equals one if the number of board meetings increased in the prior year. This variable is aimed at capturing whether the directorship is demanding additional time and effort from the director. *CEO\_Turnover* equals one if the CEO of the company was replaced during the last year. I include this last measure because the CEO is replaced when the firm experiences severe problems and/or deep transformations, and CEO turnover is often times followed by board changes.

Fourth, directors have economic and personal ties with the firm and/or its managers that can affect their departure decisions. I include the following controls to capture the effect of these ties. *Compensation* is the total annual compensation received by the director at that directorship. *Equity\_Holdings* is the value of the director's equity portfolio in the firm. *Tenure* is defined as the director's tenure in the firm (the director could have reached the end of her pre-established

time of service). *CEO\_Linked* equals one if the director has a social connection with the CEO. Social connections are measured using BoardEx data on service overlap at executive and board positions in other firms and organizations. *Affiliate* equals one if the director is “grey” (i.e., the director had a previous employment relation with the firm). *Retirement\_Year* equals one if the director’s time to retirement is less than one year, and zero otherwise. Finally, I include year and firm fixed effects to ensure that my results are not confounded by economic or industry conditions that could affect director turnover.

Table 2, Panel A, presents descriptive statistics of the control variables in equation (1) that were not described in the prior section. Consistent with directors leaving more often from directorships that are more problematic or are undergoing dramatic changes, *Litigation*, *More\_Meetings*, and *CEO\_Turnover* exhibit higher average values in the subsample of relinquished directorships. Not surprisingly, directors appear to resign more frequently when they have been serving for a longer period and when they reach the retirement age.<sup>19</sup> Table 2, Panel A, also shows that directors are less likely to depart from firms in which they have an outside-the-firm connection with the CEO. However, Panel A reveals that, unconditionally, it is unclear whether directors are more likely to depart from directorships in which they hold larger equity portfolios and receive more generous compensation.

Table 2, Panel B, presents the results of estimating equation (1). The coefficient on *Riskiest\_Directorship* is positive and statistically significant across all six specifications (t-stat. range from 4.09 to 5.65), suggesting that the descriptive pattern in Figure 2 is robust to the inclusion of other observable determinants of director turnover. The magnitude of the coefficient

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<sup>19</sup> Table 2, Panel A, shows that a substantial number of directors do not appear to retire in their retirement year. This is because not all firms have retirement policies and/or make public disclosures of these policies. When such data are not available, BoardEx assumes a retirement age of 70 years.

$\alpha_1$  ranges from 0.08 to 0.10. This is a significant figure considering that the average value of *Relinquished* is 0.42. The results in Table 2 regarding control variables are as expected. On the one hand, directorship departures are positively associated with past litigation, increase in the number of meetings, CEO turnover, tenure in the company, and reaching retirement age. On the other hand, these departures are negatively associated with the compensation received at the directorship and the existence of a social connection with the CEO.

#### 4.2. Heckman analysis

One concern about the results in Table 2 is that the subsample of departing directors has not been randomly selected. In fact, a director could leave one of her directorships for personal reasons; reasons not directly related to the characteristics of the directorships in which she serves. Accordingly, I model directors' departure decisions using a two-step Heckman correction model (Heckman, 1979). The first step models directors' decision to adjust their directorship portfolio (that is, to leave one directorship) as a function of directors' personal incentives. In the second step, I use equation (1) augmented with the inverse Mills ratio to model directors' selection of one directorship among those in their portfolio (that is, a selection conditional on previously having decided to relinquish one directorship).<sup>20</sup>

The first stage of the model includes the following variables. *Age* is the age of the director in the year of the departure. Prior literature explains that older directors can have different preferences than younger directors and are more likely to retire. *Number\_Directorships* is the number of directorships held by the director in that year. This variable captures director

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<sup>20</sup> My sample directors rarely relinquish more than one directorship. Out of 2,965 director-year observations of departing directors, we only find 170 (5.73%) of such cases. As mentioned earlier, cases of directors leaving from all of their directorships (which are even rarer) are excluded.

reputation as well as the magnitude of directors' workload. *Health\_Deterioration* equals one if the director is older than 65 and if she/he passes away during the following 3 years. This variable measures a director's incentive to reduce the size of her directorship portfolio due to a deterioration of her health condition.<sup>21</sup> *Reputational\_Problems* equals one if any of the director's directorship has been the target of shareholder litigation in the prior year. I use this variable because events causing reputational damage (such as fraud allegations, major mistakes, or prosecution) are usually associated with class action lawsuits. Moreover, as shown by Fich and Shivadsani (2007), litigation at one firm can have reputational spill-over effects on other board seats held by the director. *Increased\_Workload* equals one if the sum of the number of board meetings across the director's directorship portfolio increased in the prior year. This variable is aimed at capturing whether the director decides to reduce her directorship portfolio due to accumulation of work. *New\_Appointments* equals one if the director is appointed to a new board in that year. I include this variable because a director could decide to leave one of her existing directorships because she receives an offer to serve on a more attractive board.

Table 3, Panel A, presents descriptive statistics of the variables measuring directors' incentives to adjust their portfolio of directorships. Panel A reveals that the average values of all six hypothesized determinants of directors' incentives to reduce the size of their directorship portfolio are higher among departing directors than among non-departing directors. The differences are statistically significant for all variables except for *Increased\_Workload*.

Table 3, Panel B, presents the results of estimating the Heckman model described above. As expected, all of the variables capturing directors' incentives to adjust their board portfolios

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<sup>21</sup> I select the age of 65 assuming that the probability of suffering from a serious health condition increases with age. Although 65 is a relatively arbitrary threshold, results are similar using 60 years of age to identify individuals with serious health issues. I avoid using 70 years of age because that is the retirement age for many corporate directors.

are positively associated with the decision to leave one board, although not all reach conventional levels of statistical significance. The second stage of the Heckman model shows that the inverse Mills ratio is highly significant. Critically, however, sample-selection correction does not subsume the association between *Riskiest\_Directorship* and *Relinquished\_Directorship*.

#### 4.3. Panel regression analysis

To further check whether my inferences are affected by selection bias, I re-estimate equation (1) using a panel including all observations in the BoardEx universe of director-firm year observations from 2005 to 2013 in which the director holds more than one directorship. This alternative analysis relaxes all the sample restrictions imposed by my previous analyses. In particular, the panel includes non-departing directors, non-departure years, as well as private directorships.

In this alternative test, *Riskiest\_Directorship* is coded as one if the firm is the public directorship with highest volatility among those held by a director, and zero otherwise. Note that under this coding criterion, *Riskiest\_Directorship* is coded as zero for private directorships. By doing so I do not assume that public directorships are riskier than private directorships. This coding criterion simply reflects that my hypothesis relates to directors' tendency to depart from their riskiest *public* directorships.<sup>22</sup> That said, quoted firms are usually larger and more visible than private firms, and thus it is plausible that, from directors' perspective, public boards introduce more reputational risk and require more effort than private directorships. Moreover, the

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<sup>22</sup> Recall that the purpose of including private directorships in this alternative test is to address the concern that excluding private directorships could introduce a selection bias. For example, a director holding three directorships, two public and one private, and leaving from the private board would be excluded in previous tests (i.e., she would not be coded as a "departing director"), but she would not be excluded in this analysis. A high number of such cases could dilute the association between *Riskiest\_Directorship* and *Relinquished\_Directorship* documented in prior tests.

previously described institutional changes related to risk oversight were mainly focused on public firms. These considerations notwithstanding, to ensure that my inferences are not confounded by omitted differences between the characteristics of public and private directorships, the specification includes an indicator variable, *Public*, defined as one if the firm is a quoted firm with non-missing CRSP data, and zero otherwise.<sup>23</sup>

One drawback of this alternative research design is that there is no publicly available data for public directorships and thus I cannot construct the control variables used in prior tests for all panel observations. However, the panel regression design offers the opportunity to control for firm and director characteristics (both observable and unobservable) by using fixed effects. This is important because fixed effects are a powerful way of controlling for potentially confounding unobserved heterogeneity in firm and director characteristics.

First, I include director-year fixed effects to control for director characteristics. Note that this is equivalent to testing whether a given director in a given year departs from the public directorship in her portfolio that exhibits highest stock volatility. Note that, in contrast to director fixed effects (which control for *time-invariant* director characteristics), director-year fixed effects control for *time-variant* director characteristics. That is, director-year fixed effects control for any personal circumstance affecting the director in that specific year and thus address the concern that unobserved directors' personal reasons to adjust their directorship portfolio could have been omitted from prior tests.

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<sup>23</sup> Note that the variable *Public* controls for the possibility that the association between *Riskiest\_Directorship* and *Relinquished\_Directorship* simply reflects a higher or lower tendency to depart from public directorships. For example, consider the case of a director holding three directorships, one public and two private, that leaves her public directorship. A large enough number of such cases could induce a statistical (spurious) association between *Riskiest\_Directorship* and *Relinquished\_Directorship*.

Second, I test the association between *Riskiest\_Directorship* and *Relinquished\_Directorship* including firm-year fixed effects. This is equivalent to testing whether, among the directors present in a given firm in a given year, the director that leaves is the director for whom the board is the riskiest in her directorship portfolio. That is, firm-year fixed effects control for unobserved variation in firm characteristics in a given year and thus address the concern that unobserved firm circumstances in that specific year (e.g., disagreement between top management and directors, fraud, etc.) could have been omitted from prior tests.<sup>24</sup>

Third, I repeat the analysis including director-firm fixed effects. This is equivalent to testing whether a given director serving on a given board leaves that board in the year in which the board becomes the riskiest directorship of the director. That is, including director-firm fixed effects tests time-series variation within director-firm pairs and thus mitigates concerns related to unobserved determinants of the matching between firms and directors (e.g., directors' personal preferences towards specific directorships, firms' preferences towards specific directors, and links of all kinds between directors and firms). Also note that the time-series variation in *Riskiest\_Directorship* can be due to an increase in *Volatility* so that the directorship becomes the riskiest (thus confirming that directorship risk matters for directors), or to a decrease in *Volatility* at another directorship (in which case the cause of the variation in *Riskiest\_Directorship* would be exogenous to the firm).<sup>25</sup>

Consistent with prior results, Table 4 shows that the coefficient on *Riskiest\_Directorship* is positive and statistically significant across all these specifications. As previously explained,

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<sup>24</sup> Note that, in contrast to firm fixed effects (which control for *time-invariant* unobserved firm characteristics), firm-year fixed effects control for unobserved *time-variant* firm characteristics.

<sup>25</sup> It is also possible that the directorship becomes the riskiest due to a change in the composition of the directorship portfolio. However, this is only possible if the director has recently resigned from an even riskier directorship, thus confirming the hypothesis that directors tend to relinquish their riskiest directorships.

the results in Table 4 are important because they show that the pattern documented in Figure 2 and Table 2 is not confounded by firms and directors' characteristics or circumstances, nor by any combination of them. Rather, the results in Table 4 demonstrate that the association between *Riskiest\_Directorship* and *Relinquished\_Directorship* is indeed driven by directors' preferences with respect to a relative characteristic of the firm in the directors' portfolio. That is, the director chooses to depart from the directorship after assessing a characteristic/circumstance of that firm *with respect to* the rest of the firms in the directorship portfolio rather than assessing that firm characteristic in isolation.

## **5. Directorship portfolio adjustments around the Financial Crisis**

As explained before, the perception that insufficient risk oversight was at the heart of the 2007-2008 economic turmoil prompted significant institutional changes emphasizing the role of the board on corporate risk management. These changes likely increased directors' personal costs associated with firm risk for several reasons. First, the increased scrutiny of directors' oversight of corporate risk management activities likely translated into an increase in directors' workload and effort, especially at firms in which risk management is more complex because of the (riskier) nature of the business. Second, it is plausible that after the Financial Crisis shareholders are more likely to punish riskier firms due to a change in investors' risk aversion and/or a change in investors' assessment of bad outcomes at risky firms.<sup>26</sup>

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<sup>26</sup> It is possible that the post-crisis period prompted investors' risk awareness, thus becoming more likely to attribute bad outcomes to poor risk management rather than to the risky nature of the business. However, investors could also be more likely to penalize bad outcomes at risky firms for reasons other than sentiment and/or learning. For example, many economic agents experienced stringent financial and liquidity constraints in the post-crisis period that affected their risk preferences or their ability to diversify their portfolio. That is, investors' risk aversion could have changed as a consequence of the post-crisis economic conditions.

If the post-crisis institutional emphasis on risk oversight indeed increased the cost of sitting on risky boards, the previously described 2009 and 2010 institutional changes introduce an opportunity to further empirically identify the effect of directorship risk on directors' board departure decisions. Thus, I use these institutional changes as empirical instrument for the cost of serving on risky boards.

### *5.1. Firm risk and directors' personal costs around the Financial Crisis*

Using the 2009 and 2010 institutional changes related to risk oversight as an instrument for the cost of serving on risky boards requires a validation of the instrument. Accordingly, I substantiate my argument that the post-crisis institutional emphasis on risk oversight increased the cost of serving on riskier directorships by studying whether directors' personal costs from serving on boards vary with firm risk and whether this association is stronger in the post-crisis period.

Specifically, I consider three variables capturing directors' personal costs associated with board membership. First, *Withheld\_Votes* is defined for each firm-year as the percentage of votes withheld for directors at the firm's annual meeting in that year. This variable is informative about directors' personal costs because it reflects one type of reputational penalty imposed on directors by unsatisfied shareholders. The notion that directors care about receiving withhold votes is supported by prior research (e.g., Cail et al., 2009; Fisher et al., 2009). I compute this variable using data from Voting Analytics. Second, *Number\_Meetings* is computed as the number of times that the firm's board met in that year. This measure captures directors' time and effort spent on board matters at a given firm in a given year. The information to construct this variable is gathered from Equilar. Third, *Litigation* equals one if the firm is subject to shareholder

litigation in that year, and zero otherwise. Although directors are not always named in class action lawsuits, legal actions often translate into additional effort and dedication by board members (Brochet and Srinivasan, 2010).<sup>27</sup>

I test the association between firm risk and directors' personal costs by regressing these variables on *Volatility* including controls for the other main firm characteristics included as controls in prior tests (i.e., *Size*, *Return*) and industry fixed effects.<sup>28</sup> Because I am interested in testing whether the association between directors' personal costs and firm volatility increases in the post-crisis period, I conduct the analysis separately for the years before 2009 and the period starting in 2009 and ending in 2013.

Table 5 shows the results. Consistent with the notion that riskier firms are more costly for directors, the coefficient on *Volatility* is positive and significant across all three measures. This positive association is not surprising because, by definition, the probability of extreme outcomes (both adverse and favorable) at riskier firms is higher than at other firms, and *Withheld\_Votes*, *Number\_Meetings*, and *Litigation* are naturally associated with adverse outcomes.

But perhaps more interestingly, the magnitude of the coefficient on *Volatility* is significantly higher in the 2009-2013 than in the 2005-2008 period for all three measures of directors' personal costs. However, I do not observe such pattern for the other two right-hand-side variables, namely *Size* and *Return*. In contrast to the coefficient on *Volatility*, the coefficients on *Size* and *Return* corresponding to the post-crisis period decrease in absolute value for all three dependent variables. Consistently, the *t*-statistics of the coefficients on *Size* and *Return* are smaller in the post-crisis period, revealing a weaker statistical association between these variables and the left-hand-side variables.

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<sup>27</sup> Data on litigation is obtained from Capital IQ's Key Developments database.

<sup>28</sup> I also include *BM*, *Leverage*, and *ROA* as additional controls and obtain very similar results.

Finally, following prior literature (e.g., Linck et al., 2010) I also use a firm's level of director compensation as a fourth proxy for the costs that directors bear from serving on the board of that firm. The rationale behind this proxy is that, for retention purposes, firms need to make up for directors' higher personal costs by compensating them with higher levels of pay. Thus, finding that a positive association between director compensation levels and firm risk would suggest that directors' personal costs associated with firm risk require additional compensation. In other words, such result would suggest that these costs are substantial. Table 5 also presents results of testing the association between director compensation and firm risk during the two previously defined periods (i.e., 2005-2008 and 2009-2013). In parallel with prior tests, I regress the natural logarithm of *Director\_Compensation* (defined as the total amount of annual compensation for directors at the firm, including retainers, meeting, and committee fees in both cash and equity) on the logarithm of *Volatility*, *Size*, and *Return*. Consistent with the notion that directorship risk is costly for directors, Table 5 shows that *Director\_Compensation* is higher at riskier firms. Also consistent with the cost of serving on riskier boards increasing after the Crisis, Table 5 reveals that this association is stronger during the 2009-2013 period.

Overall, the results in Table 5 suggest that, in the post-crisis period, shareholders are more likely to take action against the boards of riskier firms. Moreover, the higher number of board meetings at riskier firms in the post-crisis period suggests that higher scrutiny of the role of the board on risk oversight results in an increased workload for board members. Thus, the evidence in Table 5 corroborates that directors' personal costs associated with sitting on the board of riskier firms increases substantially in the post-crisis period.

## 5.2. Probability of departing from the riskiest directorship around the Financial Crisis

After having validated the instrument, I analyze the effect of the 2009-2010 institutional changes related to risk management on directors' tendency to leave their riskiest directorships. As explained previously, Figure 2 documents a significant increase in departures from riskiest directorships in the years following the Financial Crisis (i.e., in 2009 and 2010). I formally test the robustness of this pattern by estimating equation (1) in the periods before and after the end of the financial turmoil. I further divide the post-crisis period into the two years immediately following the Financial Crisis (2009-2010) and the rest of the post-crisis period (2011-2013). The purpose of isolating the years 2009 and 2010 is to formally test the existence of a peak in the probability of departing from directors' riskiest directorships in these years (see Figure 2).

Table 6 presents the results of testing inter-period differences in directors' tendency to relinquish their riskiest directorships. The coefficient on *Riskiest\_Directorship* is positive and significant in all three periods, confirming that directors' tendency to leave their riskiest directorships is a general phenomenon not restricted to the post-crisis period. However, Table 6 reveals that the magnitude of the coefficient on *Riskiest\_Directorship* more than doubles in the years immediately following the Financial Crisis (the coefficient increases from 0.05 to 0.13). Although this magnitude decreases after 2010, it still remains significantly higher than in the 2005-2008 period. The tests of equality of coefficients in Table 6 show that these patterns are statistically significant.

Overall, the results in Tables 5 and 6 offer a sharper identification of the effect of directorship risk on directors' decision to leave one specific directorship among those in her portfolio. But perhaps more importantly from a regulatory perspective, the evidence in Tables 5 and 6 also suggests that the post-crisis emphasis on risk oversight had at least one unintended

consequence, i.e., board turnover. In the following section I explore the materiality of this unintended consequence for the firms experiencing the turnover.

## **6. Economic consequences of board departures**

A natural question that arises from the result that directors are more likely to relinquish their riskiest directorships in the post-crisis period is whether these board departures had a material effect on the firms experiencing them. In this section, I attempt to shed some light on this question by exploring the economic consequences of departures from directors' riskiest directorships. First, I explore changes in performance around board departures. Second, I analyze firms' risk-taking behavior around the departures.

### *6.1. Profitability*

To assess the performance consequences of directors' departures from their riskiest directorships I analyze changes in firm operating profitability around these departures. I benchmark the performance of the treatment group of relinquished riskiest directorships (i.e., observations coded as *Relinquished\_Directorship* = 1 and *Riskiest\_Directorship* = 1) to two control groups. First, I compare the treatment group to relinquished *non-riskiest* directorships (i.e., observations coded as *Relinquished\_Directorship* = 1 and *Riskiest\_Directorship* = 0). That is, relinquished directorships that are not the riskiest among departure directors' directorships. This first control group allows me to control for potentially omitted determinants of board turnover. Second, I compare the treatment group to *non-relinquished* riskiest directorships (i.e., observations coded as *Relinquished\_Directorship* = 0 and *Riskiest\_Directorship* = 1). That is,

riskiest directorships that are retained by departure directors. This second control group allows me to control for potentially omitted determinants of directorship risk.

I start by comparing changes in performance among relinquished directorships (i.e., observations coded as *Relinquished\_Directorship* = 1). In particular, I estimate the following model:

$$\Delta_{ROA_{t+1}} = \beta_0 + \beta_1 \text{Riskiest\_Directorship} + \theta \text{Controls} + \varepsilon, \quad (2)$$

The dependent variable  $\Delta_{ROA_{t+1}}$  is calculated as  $ROA_{t+1} - ROA_t$ , where  $ROA_{t+1}$  ( $ROA_t$ ) is the operating cash-flows scaled by total assets (expressed as a %) averaged over the four calendar quarters after (before) the end of the year of the departure. *Riskiest\_Directorship* is as defined in prior tests. *Controls* is a vector of control variables. Prior research demonstrates that statistical tests of *ROA* must control for industry affiliation, firm size, and some specific characteristics of the stochastic process of earnings such as mean reversion (e.g., Foster, 1977; Barber and Lyon, 1996). Thus, I include  $\Delta_{ROA\_Industry}$  calculated as  $ROA\_Industry_{t+1} - ROA\_Industry_t$ , where  $ROA\_Industry_{t+1}$  ( $ROA\_Industry_t$ ) is the industry mean operating cash-flows scaled by total assets (expressed as a %) averaged over the four calendar quarters after (before) the end of the year of departure. Industry affiliation is defined based on Fama French 12-group classification.  $Lag\_ARO A$  is computed as  $ROA_t - ROA_{t-1}$ . I include this variable to control for mean reversion in profitability. Because firms with higher cash-flow volatility are likely to have higher risk and correspondingly higher expected profitability, we include a measure of the firm's cash-flow volatility, defined as the standard deviation of the firm's quarterly *ROA* over the five years prior to end of the year of the departure ( $\sigma_{ROA}$ ). *Log\_TA* is the logarithm of total assets. *BM* and

*Leverage* are as previously defined. *Adj\_Return* is the market-adjusted stock return over the year of the departure.

Next, I re-estimate equation (2) using the subset of riskiest directorships (i.e., observations coded as *Riskiest\_Directorship* = 1) and replacing *Riskiest\_Directorship* with *Relinquished\_Directorship* (as defined in prior tests). Table 7 presents the results of these tests. The coefficients on *Riskiest\_Directorship* (Panel A) and *Relinquished\_Directorship* (Panel B) are negative and significant only in the 2009-2010 period. Table 7 also shows that the coefficients of these two variables in the 2009-2010 period are statistically different from those in the adjacent periods (*p*-values of 0.006 and 0.001, respectively). The magnitude of the coefficients on *Riskiest\_Directorship* and *Relinquished\_Directorship* in column (2) of Panel A and Panel B are, respectively, -1.65 and -1.36, suggesting that directors' departures from their riskiest directorships in the post-crisis period are associated with a relative decrease in profitability of around 1%. Taken together, this evidence suggests that the departure of directors leaving their riskiest directorships in the years immediately following the Financial Crisis had material consequences.

## 6.2. Risk-taking

One possible explanation of the previously-documented pattern of profitability is that departures from directors' riskiest directorships cause firms to lose valuable director talent. However, it is also possible that the documented decrease in firm performance is partially driven by a change in risk-taking policies. For example, it is plausible that the resigning board members are replaced by equally talented but more risk-averse directors that disfavor risky but profitable

investment strategies.<sup>29</sup> I explore this possibility by analyzing changes in risk-taking behavior among firms experiencing departures of directors leaving their riskiest directorships.

To test whether departures from riskiest directorships are followed by changes in risk-taking, I use two measures of risk-taking behavior commonly used in previous literature (e.g., Coles et al., 2006), namely stock volatility and investment in research and development (R&D).  $\Delta Volatility$  is computed as  $Volatility_{t+1} - Volatility_t$ , where  $Volatility_{t+1}$  is the stock return volatility computed daily over year  $t+1$  (year  $t$  is the year of departure) and  $Volatility_t$  is computed similarly over year  $t$ .  $\Delta R\&D$  is calculated as  $R\&D_{t+1} - R\&D_t$ , where  $R\&D_{t+1}$  is the R&D expense scaled by total assets averaged quarterly over year  $t+1$ , and  $R\&D_t$  is the same measure in year  $t$ .

Table 8 presents the results of changes in these two measures in the previously considered time periods (i.e., 2005-2008, 2009-2010, and 2011-2013). As in prior tests, I compare treatment firms (i.e., observations coded as *Relinquished\_Directorship* = 1 and *Riskiest\_Directorship* = 1) to two control groups. First, I compare the treatment group to relinquished *non-riskiest* directorships (i.e., observations coded as *Relinquished\_Directorship* = 1 and *Riskiest\_Directorship* = 0). Second, I compare the treatment group to *non-relinquished* riskiest directorships (i.e., observations coded as *Relinquished\_Directorship* = 0 and *Riskiest\_Directorship* = 1).

As shown in Table 8, departures of directors from their riskiest directorships are usually associated with decreases in *Volatility* and *R&D* in the post-crisis period, especially in the 2009-2010 subperiod. This pattern is significantly less pronounced among firms in the two control

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<sup>29</sup> A descriptive analysis of the directors appointed after the departure of directors leaving their riskiest directorships reveals that the incoming directors are younger, less experienced, and hold fewer boards than the departing directors (these differences are statistically significant). Thus, it is possible that the risk preferences of the replacing directors are different than those of the outgoing directors.

groups. The magnitude of the difference in  $\Delta\_Volatility$  with respect to the two control groups during the 2009-2010 period is  $-1.10$  (Panel A) and  $-0.47$  (Panel B). The corresponding figures for  $\Delta\_R\&D$  are, respectively,  $-0.29$  and  $-0.64$ . That is, directors departures from riskiest directorships are associated with decreases of around 1% in *Volatility* and around 0.5% in *R&D* expenditures.

Taken as a whole, the results in Table 7 and 8 suggest that directors' departures from their riskiest directorships have material consequences for the firms experiencing these departures. In particular, it appears that such departures are followed by lower-risk strategies associated with a lower reward.

## **7. Robustness and additional evidence**

### *7.1. Alternative measurement choices*

One possible concern about the results in Table 2 is that my inferences could be sensitive to alternative definitions of the variable of interest, i.e., *Riskiest\_Directorship*. Thus, I next explore the robustness of my results to alternative measurement choices. First, I replace *Riskiest\_Directorship* in equation (1) with an alternative measure, *Relative\_Volatility*, defined in the same way as *Relative\_Size*, and *Relative\_Return* in Table 2, that is, as the fractional rank of *Volatility* by director and year. Second, I define *Adjusted\_Volatility* as *Volatility* of that directorship minus the average *Volatility* of the public directorships held by that director in that year. For consistency, I replace *Relative\_Size*, and *Relative\_Return* with *Adjusted\_Size*, and *Adjusted\_Return*, respectively, in this alternative specification. These latter variables are defined in the same way as *Adjusted\_Volatility* (i.e., by mean-adjusting *Size* and *Return* with respect to the director's portfolio of directorships). As shown in Table 9, Panel A, estimating equation (1)

using these alternative measures of risk relative to directorship portfolio results in similar inferences.

I also construct additional controls similar to *Relative\_Size*, and *Relative\_Return*, but based on other directorship characteristics. Specifically, *Relative\_BM* is defined as the fractional rank of *BM* within the directorship portfolio in the year of departure (i.e., I rank the directorships held by each director at the start of the year based on *BM*). *Relative\_Leverage* is defined as the fractional rank of *Leverage* within the directorship portfolio. *Relative\_ROA* is defined as the fractional rank of *ROA* within the directorship portfolio. *Relative\_Equity\_Holdings* is defined as the fractional rank of *Equity\_Holdings* within the directorship portfolio. *Relative\_Compensation* is defined as fractional rank of *Compensation* within the directorship portfolio. *Relative\_Tenure* is defined as the fractional rank of *Tenure* within the directorship portfolio. Table 9, Panel B, reveals that the coefficient on *Riskiest\_Directorship* remains positive and highly statistically significant after including all these additional control variables.

## 7.2. Alternative explanations

One possible alternative explanation of the turnover pattern I document is that, rather than for personal reasons, the director leaves the firm pressured by the rest of the board members due to her questionable behavior, insufficient effort, and/or disagreements with management or other directors (e.g., Shrinivasan, 2005; Agrawal and Chen, 2011). My prior tests account for this alternative explanation by including variables to control for the possibility that the departure is driven by problems at the directorship or by directors' reputational losses (see Tables 2 and 3). Moreover, the results in Table 4 (columns 2, 3, and 4) further show that forced turnover is unlikely to explain the turnover pattern I document. Note that if the director suffers a reputational

loss in that year, the reputational damage would be reflected across her whole directorship portfolio in that year and thus captured by the director-year fixed effects. If the forced turnover is driven by a problem at that specific firm (e.g., an accounting irregularity, litigation, disagreements, etc.), the motivation to replace directors would be captured by the firm-year fixed effects. Finally, the possibility that the director was replaced because she preferred to spend her energies at other directorships (i.e., insufficient effort) is controlled for by the director-firm fixed effects (which capture the determinants of director-firm matching).

That said, I further check whether this alternative explanation is likely to drive my results by including measures of the firm's corporate governance characteristics. *Pct\_Independent* is the percentage of independent directors. *Chair\_Insider* is an indicator variable that equals one if the chair of the board is not an outside director. *Staggered* is an indicator variable that equals one if the board is classified. *Directors\_Holdings* is the percentage of equity held by outside directors. *Pct\_Institutions* is the percentage of shares held by institutions (measured using CDA Spectrum data). These variables control for the possibility that firms with stronger governance are more likely to discipline directors after poor performance and/or misbehavior. Table 9, Panel B, shows that inferences remain unaltered when including these additional control variables.

Another plausible alternative explanation for my results is that directors leave their riskiest directorships because they are aware of *already existing* problems that are still not publicly known but are bound to surface in the future (e.g., Fahlenbrach et al., 2014). In contrast, my interpretation of the results in Table 2 is that directors chose to resign from their riskiest directorships because of problems that *might* but *have not* occurred at the time of the departure.

Again, this alternative explanation is hard to reconcile with the result in Table 4 (column 3) that the association between *Relinquished\_Directorship* and *Riskiest\_Directorship* is positive

and statistically significant when including firm-year fixed effects. Note that the existence of undisclosed adverse news at the firm in a given year is controlled for by the firm-year fixed effects (which capture both observed and unobserved firm- and year-specific variation).

That being said, to further check that my results cannot be explained by directors' desire to leave the company before adverse news become public, I include measures of future bad news as additional controls in equation (1). Specifically, *Future\_Return* is the market-adjusted stock return compounded daily over year  $t+1$  ( $t$  is the year of departure). *Future\_Δ\_ROA* is computed as  $ROA_{t+1} - ROA_t$ , where  $ROA_{t+1}$  ( $ROA_t$ ) is defined as operating cash-flows scaled by total assets (expressed as a %) averaged quarterly over year  $t+1$  ( $t$ ). To ensure that my inferences are not affected by measurement choices, I also use two indicator variables defined based on *Future\_Negative\_Return* and *Future\_Δ\_ROA*. *Future\_Negative\_Return* equals one if  $Future_Return < 0$ , and zero otherwise. Similarly, *Future\_Negative\_ROA* equals one if  $Future_Δ_ROA < 0$ , and zero otherwise. Lastly, *Future\_Litigation* equals one if the firm is subject to shareholder litigation in year  $t+1$ , and zero otherwise.

Additionally, I re-estimate equation (1) restricting my analysis to directorships with  $Future_Return < 0$ ,  $Future_Δ_ROA < 0$ , and  $Future_Litigation = 1$ . Finding that directors are also more likely to leave their riskiest directorships in a subsample of firms experiencing future bad news would suggest that the pattern I document is not driven by variation in directors' anticipation to future firm problems.

Table 10 presents the results of these tests. The coefficient on *Riskiest\_Directorship* remains positive and statistically significant after including the previously defined additional controls and sample restrictions. This suggests that the turnover pattern I document is unlikely to be driven by directors' leaving the firm ahead of trouble.

## **8. Conclusions**

This paper examines the effect of directorship risk on directors' departure decisions. I analyze board changes in the periods prior and subsequent to the recent financial crisis and find that, in the post-crisis period, directors are more likely to resign from their riskiest directorships. The tendency to depart from riskiest directorships is most pronounced in the first two years of the post-crisis period.

Consistent with the notion that directors' personal costs from holding board positions at risky firms increase after the Financial Crisis, I find that the association between firm risk and the percentage of withhold votes, the number of board meetings, and the probability of shareholder litigation becomes stronger during the post-crisis period. Taken together, these results are consistent with the conclusion that the cost of serving on boards of risky firms has increased substantially after the financial crisis.

Additional tests show that resignations from riskiest directorships are associated with subsequent decreases in firm performance, stock volatility, and R&D investment. That is, after directors leave their riskiest directorships, those firms adopt more conservative risk-taking policies at the expense of lowering their profitability.

Overall, my evidence suggests that the post-crisis insistence on risk oversight could have altered directors' preferences across their directorship portfolio. This change in preferences translates into a turnover pattern that appears to have material consequences on the firms experiencing it. Thus, my study sheds some light on the economic consequences of the post-crisis emphasis on risk oversight.

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## Appendix A. Variable Definitions

### A.1. Firm characteristics in absolute terms

<i>Volatility</i>	Firm's annual stock return volatility measured using daily data
<i>Size</i>	Firm's equity market value (in \$ million)
<i>BM</i>	Ratio of book value of equity to market value of equity
<i>Return</i>	Stock return compounded over one year using daily data
<i>Leverage</i>	Total liabilities divided by total assets
<i>ROA</i>	Operating cash-flow scaled by total assets

### A.2. Firm characteristics in relative terms

<i>Relative_</i>	A prefix indicating that the variable is fractionally ranked by director and year.
<i>Adjusted_</i>	A prefix indicating that the variable is adjusted by its median value per director and year.

### A.3. Problems at the directorship

<i>Litigation</i>	Indicator variable that equals one if in that year there is an announcement that the firm is subject to a shareholder lawsuit zero otherwise
<i>More_Meetings</i>	Indicator variable that equals one if the number of board meetings in that year increased with respect to the prior year
<i>CEO_Turnover</i>	Indicator variable that equals one if a new CEO is appointed in that year and zero otherwise

### A.4. Economic and personal ties to the directorship

<i>Equity_Holdings</i>	Director's accumulated wealth in the firm. Director wealth is computed as the value of the director's equity portfolio in the firm (that is, the market value of the owned shares and the options exercisable within 60 days)
<i>Compensation</i>	Total annual compensation by director at the firm (including retainers, meeting, and committee fees in both cash and equity)
<i>Tenure</i>	Director's tenure in the firm (measured in years)
<i>CEO_Linked</i>	Indicator variable that equals one if the director is socially connected to the CEO. Social connections are coded as one if the two persons overlap in their service to a company or organization (other than the firm) prior to that year
<i>Affiliate</i>	Indicator variable that equals one if the director is affiliate. Affiliate directors are directors who are not employees of the company but do not qualify as "independent"
<i>Retirement_Year</i>	Indicator variable that equals one if the director's time to retirement is less than one year, and zero otherwise. Data on time to retirement is collected from Boardex. When data on the firm's retirement policy is not available, the retirement age of supervisory directors is assumed to be 70.

#### **A.5. Incentives to adjust the directorship portfolio**

<i>Age</i>	Age of the director (in years)
<i>Number_Directorships</i>	Total number of directorships held by the director in that year
<i>Health_Deterioration</i>	Indicator variable that equals one if the director passes away during the following three years, and zero otherwise
<i>Reputational_Problems</i>	Indicator variable that equals one if at least one of the firms in which the director serves experiences litigation, and zero otherwise
<i>Increased_Workload</i>	Indicator variable that equals one if the number of board meetings across the directors' directorship portfolio increased with respect to the prior year, and zero otherwise
<i>New_Appointments</i>	Indicator variable that equals one if the director is appointed to a new board position or to a top executive position during that year, and zero otherwise

#### **A.6. Proxies for directors' personal costs associated with board membership**

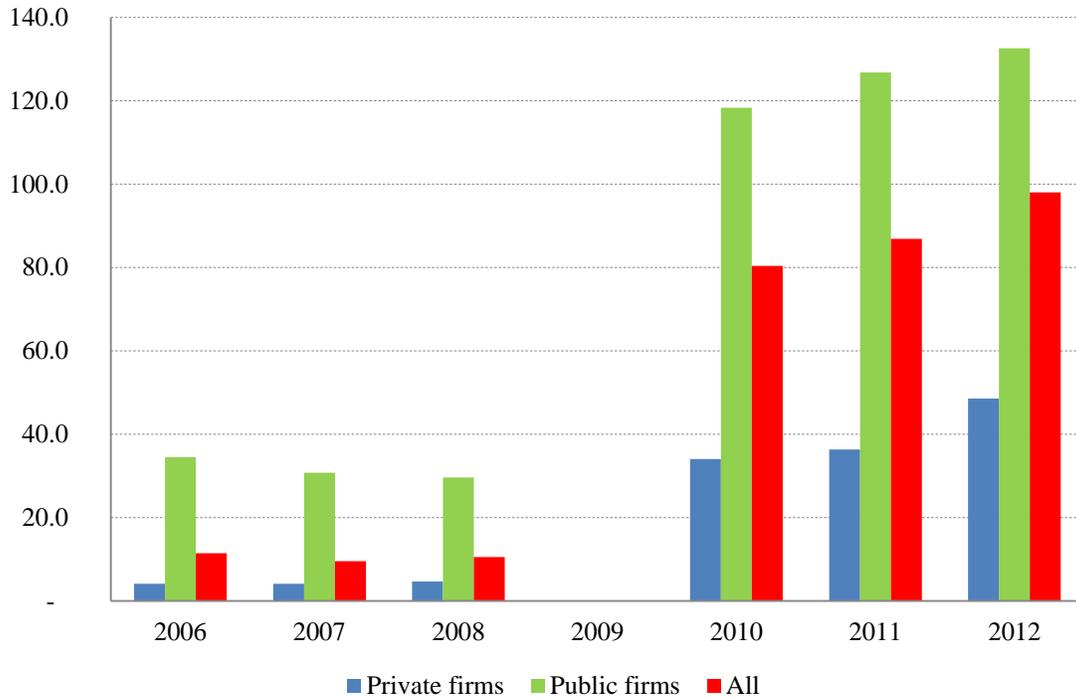
<i>Withheld_Votes</i>	Percentage of votes withheld for directors in that year's director election
<i>Number_Meetings</i>	Number of board meetings in that year
<i>Litigation</i>	Indicator variable that equals one if the firm is subject to shareholder litigation in that year, and zero otherwise
<i>Director_Compensation</i>	Total amount of annual compensation for directors at the firm, including retainers, meeting, and committee fees in both cash and equity

#### **A.6. Governance characteristics**

<i>Pct_Independent</i>	Percentage of independent directors
<i>Chair_Insider</i>	Indicator variable that equals one if the chair of the board is not an outside director
<i>Staggered</i>	Indicator variable that equals one if the board is classified
<i>Directors_Holdings</i>	Percentage of equity held by outside directors
<i>Pct_Institutions</i>	Percentage of shares held by institutions

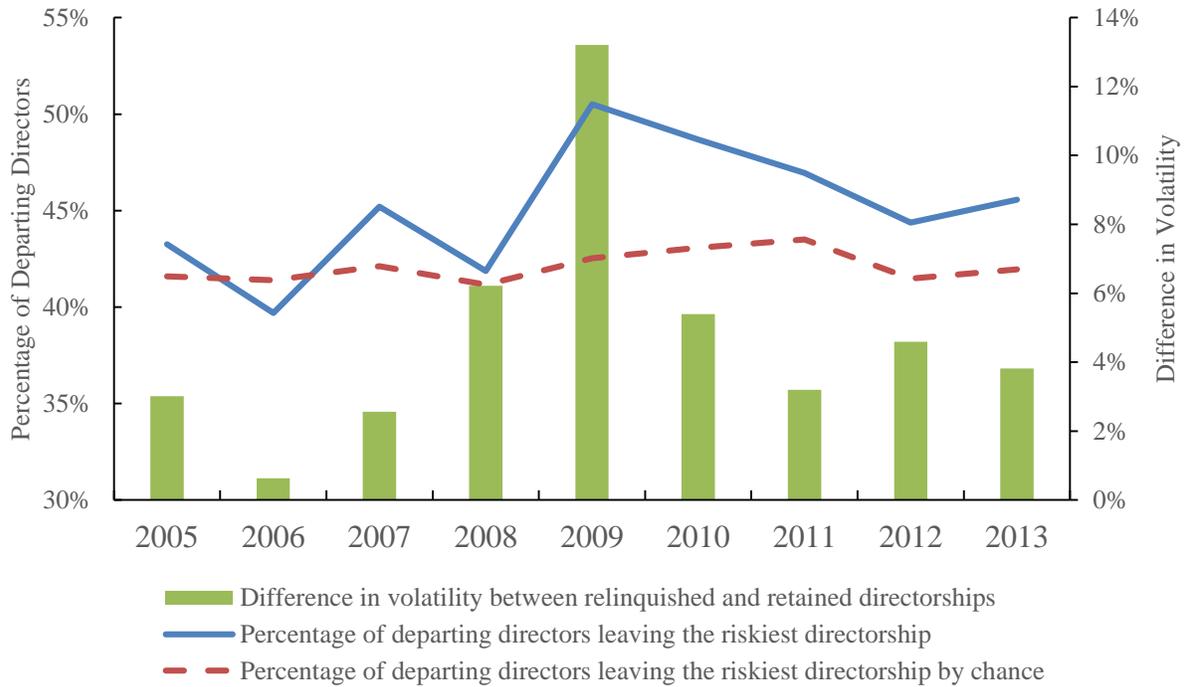
### Figure 1. Limits of D&O insurance

This figure shows the annual average total limits of D&O insurance (in US\$ millions) in the period between 2006 and 2011. Source: Towers Watson's Directors and Officers Liability annual surveys.



**Figure 2. Departures from directors' riskiest directorships**

This figure plots the percentage of departing directors leaving their riskiest directorship in each year of the sample period (blue continuous line, left axis) and the difference in stock return volatility between departing directors' relinquished and retained directorships (green bars, right axis). The red dotted line (left axis) is the annual percentage of departing directors leaving their riskiest directorship by chance, computed by randomizing the departure decision for each departing director (i.e., for each director and departure year, one of the directorships is randomly coded as "relinquished").



**Table 1. Descriptive statistics**

This table reports descriptive statistics for my sample of director-firm-year observations from 2005 to 2013. *Relinquished* refers to observations in which the departing director departs from the board in that year. *Retained* refers to observations in which the departing director does not depart from the board in that year. Panel A presents the industry distribution of the sample directorships. Panel B reports descriptive statistics of the main characteristics of the sample directorships. All variables are measured at the start of the year (i.e., based on data from the prior year). Variable definitions are in Appendix A.

**Panel A. Industry distribution**

<i>Fama-French 12 industry groups</i>	<i>Relinquished</i> (3,168 obs)	<i>Retained</i> (4,323 obs)
Business equipment	14.43%	13.09%
Chemicals and allied products	3.63%	3.54%
Consumer durables	2.59%	2.08%
Oil, gas, and coal extraction and products	4.23%	4.30%
Healthcare, medical equipment and drugs	11.49%	12.05%
Manufacturing	9.91%	10.29%
Financial firms	16.98%	18.07%
Consumer nondurables	5.33%	4.79%
Wholesale, retail, and some services	9.66%	10.53%
Telephone and television transmission	2.46%	2.43%
Utilities	4.61%	3.96%
Other	14.68%	14.87%

**Panel B. Main directorship characteristics**

<i>Variable</i>	<i>Relinquished</i> (3,168 obs.)		<i>Retained</i> (4,323 obs.)		<i>Relinquished</i> vs <i>Retained</i> ( <i>p</i> -value)
	<i>median</i>	<i>mean</i>	<i>median</i>	<i>mean</i>	
<i>Volatility</i>	0.45	0.38	0.41	0.35	0.014
<i>MV</i>	11,552	1,443	11,491	1,832	0.933
<i>Return</i>	0.10	0.05	0.14	0.09	0.100
<i>BM</i>	0.58	0.46	0.50	0.42	0.014
<i>Leverage</i>	0.25	0.21	0.24	0.20	0.268
<i>ROA</i>	0.03	0.06	0.05	0.07	0.001

**Table 2. Are departing directors more likely to relinquish their riskiest directorships?**

This table presents a multivariate test of whether departing directors are more likely to relinquish the riskiest directorship in their portfolio. “Departing directors” are directors departing from one of her public directorships in that year. Panel A presents descriptive statistics of the control variables that are not included in Table 1. Panel B presents results of estimating an OLS model including all the public directorships of departing directors in the year of departure. The dependent variable, *Relinquished\_Directorship*, is defined as one if the director leaves that directorship in that year, and zero otherwise. *Riskiest\_Directorship* equals one if the firm is the directorship with highest *Volatility* among the directorships held by the director at the start of the year. See Appendix A for the rest of variable definitions. *t*-statistics are clustered by year. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1% significance level (two-tail).

**Panel A. Descriptive statistics of specific controls**

<i>Variable</i>	<i>Relinquished</i> (3,168 obs.)		<i>Retained</i> (4,323 obs.)		<i>Relinquished</i> vs <i>Retained</i> ( <i>p</i> -value)
	<i>mean</i>	<i>median</i>	<i>mean</i>	<i>median</i>	
<b><i>Problems at the directorship:</i></b>					
<i>Litigation</i>	0.22	0.00	0.20	0.00	0.110
<i>More_Meetings</i>	0.32	0.00	0.29	0.00	0.053
<i>CEO_Turnover</i>	0.16	0.00	0.10	0.00	< 0.001
<b><i>Economic and personal ties to the directorship:</i></b>					
<i>Equity_Holdings</i> (\$ thousands)	41,783	1,100	23,562	1,056	0.019
<i>Compensation</i> (\$ thousands)	159	145	261	156	0.292
<i>Tenure</i> (years)	8.75	6.70	7.71	5.80	0.001
<i>CEO_Linked</i>	0.19	0.00	0.21	0.00	0.034
<i>Affiliate</i>	0.13	0.00	0.09	0.00	< 0.001
<i>Retirement_Year</i>	0.06	0.00	0.05	0.00	0.036



**Table 3. Heckman's sample selection model**

This table presents an analysis of directors' tendency to leave their riskiest directorships using a Heckman sample selection model. The first-stage regression models the probability that a director decides to adjust her directorship portfolio (i.e., leave at least one of her directorships) for personal reasons (i.e., reasons not necessarily related to the directorship). The second stage models whether, conditional on having decided to leave one directorship, departing directors' are more likely to relinquish the riskiest directorship in their portfolio. Panel A shows descriptive statistics of directors' incentives to adjust their directorship portfolio used in the first stage. Panel B presents results of the estimation of the Heckman model. *z*-statistics (in parenthesis) are computed based on standard errors clustered by year. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1% significance level (two-tail).

**Panel A. Directors' incentives to adjust their directorship portfolio. Descriptive statistics**

<i>Director characteristic</i>	<i>Departing directors</i> (2,965 obs.)		<i>All sample directors</i> (20,864 obs.)		<i>Departing vs Non-departing</i> ( <i>p</i> -value)
	<i>mean</i>	<i>median</i>	<i>mean</i>	<i>median</i>	
<i>Age</i>	63.17	64	62.38	63	0.004
<i>Number_Directorships</i>	4.84	4	4.56	4	0.005
<i>Health_Deterioration</i>	0.007	0	0.004	0	0.107
<i>Reputational_Problems</i>	0.40	0	0.33	0	< 0.001
<i>Increased_Workload</i>	0.39	0	0.37	0	0.237
<i>New_Appointments</i>	0.28	0	0.20	0	< 0.001

**Panel B. Heckman analysis**

<i>Independent Variables:</i>	<i>1<sup>st</sup> Stage</i> <i>Dep. Variable:</i> <i>Departing_Director</i>	<i>2<sup>nd</sup> Stage</i> <i>Dep. Variable:</i> <i>Relinquished_Directorship</i>
<i>Riskiest_Directorship</i>		0.07*** (3.63)
<i>Other firm characteristics in relative terms</i>		YES
<i>Firm characteristics in absolute terms</i>		YES
<i>Economic and personal ties to the directorship</i>		YES
<i>Problems at the directorship</i>		YES
<i>Incentives to adjust the directorship portfolio:</i>		
<i>Log(Age)</i>	0.40*** (3.46)	
<i>Log(Number_Directorships)</i>	0.05 (1.30)	
<i>Health_Deterioration</i>	0.19 (1.51)	
<i>Reputational_Problems</i>	0.20*** (8.65)	
<i>Increased_Workload</i>	0.04 (1.46)	
<i>New_Appointments</i>	0.21*** (5.55)	
<i>Inverse Mills Ratio (<math>\lambda</math>)</i>		0.21*** (4.04)
<i>Year Fixed Effects</i>	YES	YES
<i>Industry Fixed Effects</i>	YES	YES
<i>N</i>	58,218	7,491
<i>Prob &gt; <math>\chi^2</math></i>		< 0.001

**Table 4. Panel regression analysis with fixed effects**

This table presents an analysis of directors' tendency to leave their riskiest directorships including all director-firm-year observations in the BoardEx universe in which the director holds more than two directorships.

*Riskiest\_Directorship* is defined as one if the firm is the *public* directorship with highest *Volatility* in the director's portfolio, and zero otherwise. *Public* is indicator variable for whether the firm is public. Variable definitions are in Appendix A. Standard errors are clustered by year. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1% significance level (two-tail).

<i>Independent Variables:</i>	<i>Dependent Variable: Relinquished_Directorship</i>			
	<i>Including private directorships</i> (1)	<i>Controlling for unobserved director characteristics</i> (2)	<i>Controlling for unobserved firm characteristics</i> (3)	<i>Controlling for unobserved determinants of director-firm match</i> (4)
<i>Riskiest_Directorship</i>	0.02*** (4.53)	0.01** (2.49)	0.003** (2.09)	0.02*** (4.55)
<i>Public</i>	-0.09*** (-4.03)	0.17*** (5.56)		-0.09*** (-3.23)
<i>Industry-Fixed Effects</i>	YES	YES		YES
<i>Director-year Fixed Effects</i>		YES		
<i>Firm-year Fixed Effects</i>			YES	
<i>Director-firm Fixed Effects</i>				YES
<i>R</i> <sup>2</sup>	0.01	0.44	0.59	0.48
<i>Adjusted R</i> <sup>2</sup>	0.01	0.22	0.43	0.13
<i>N</i>	132,723	132,723	132,723	132,723

**Table 5. Are riskier directorships more costly for directors after the Crisis?**

This table presents results of estimating inter-period differences in the association between directorship risk and directors' personal costs associated with serving on corporate boards. Variables are as defined in Appendix A. *p*-values are based on standard errors clustered by firm and year. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) respectively.

<i>Subperiod:</i>	<i>Log(Withheld_Votes)</i>		<i>Log(Number_Meetings)</i>		<i>Litigation</i>		<i>Log(Director_Compensation)</i>	
	Year < 2009	Year ≥ 2009	Year < 2009	Year ≥ 2009	Year < 2009	Year ≥ 2009	Year < 2009	Year ≥ 2009
<i>Indep. Vars:</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Log(Volatility)</i>	0.01 (0.18)	0.15*** (3.09)	0.11*** (7.76)	0.21*** (11.95)	0.04*** (9.61)	0.06*** (10.23)	0.13*** (2.63)	0.24*** (7.80)
<i>Log(MV)</i>	0.04*** (3.12)	-0.03** (-2.52)	0.03*** (7.19)	0.02*** (5.92)	0.04*** (16.61)	0.03*** (14.44)	0.40*** (26.71)	0.39*** (51.86)
<i>Return</i>	-0.14*** (-3.80)	0.01 (0.72)	-0.08*** (-7.44)	-0.02* (-1.87)	-0.05*** (-10.60)	-0.02*** (-4.35)	-0.28*** (-7.99)	-0.05*** (-5.22)
<i>Year FE</i>	YES	YES	YES	YES	YES	YES	YES	YES
<i>Industry FE</i>	YES	YES	YES	YES	YES	YES	YES	YES
<i>R</i> <sup>2</sup>	0.02	0.02	0.06	0.07	0.08	0.07	0.31	0.44
<i>N</i>	7,400	9,401	10,876	12,844	13,442	17,047	11,164	13,198
<i>Equality of coefficients on Log(Volatility)</i>	<i>p-value</i> = 0.011		<i>p-value</i> = 0.002		<i>p-value</i> = 0.001		<i>p-value</i> = 0.096	

**Table 6. Has the tendency to leave riskiest directorships increased after the Crisis?**

This table presents an analysis of directors' tendency to leave their riskiest directorships by sample period. Regression models are as defined in Table 2. *Relinquished\_Directorship* and *Riskiest\_Directorship* are as defined in previous tables. The rest of variables are defined in Appendix A. *p*-values are based on standard errors clustered by year. \*, \*\* and \*\*\* denote significance at the 10, 5 and 1% significance level (two-tail).

<i>Independent Variables:</i>	<i>Subperiod:</i>	<i>Dependent Variable:</i> <i>Relinquished_Directorship</i>		
		2004-2008 (1)	2009-2010 (2)	2011-2013 (3)
<i>Riskiest_Directorship</i>		0.05** (2.55)	0.13*** (4.01)	0.09*** (3.63)
<i>Other firm characteristics in relative terms</i>		YES	YES	YES
<i>Firm characteristics in absolute terms</i>		YES	YES	YES
<i>Problems at the directorship</i>		YES	YES	YES
<i>Economic and personal ties to the directorship</i>		YES	YES	YES
<i>Year Fixed Effects</i>		YES	YES	YES
<i>Industry Fixed Effects</i>		YES	YES	YES
<i>R</i> <sup>2</sup>		0.036	0.059	0.083
<i>N</i>		3,452	1,409	2,630
Equality of coefficients on <i>Riskiest_Directorship</i> : (Period 2009-2010 vs other periods)		<i>p</i> -value = 0.014		

**Table 7. Changes in profitability around departures from riskiest directorships**

This table presents an analysis of changes in profitability around resignations from riskiest directorships. Panel A includes departing directors' relinquished directorships (i.e., observations coded as *Relinquished\_Directorship* = 1). *Riskiest\_Directorship* is defined as one if the firm is the departing director's directorship with highest *Volatility* (measured in  $t-1$ , where  $t$  is the year of the resignation). Panel B includes departing directors' riskiest directorships (i.e., observations coded as *Riskiest\_Directorship* = 1). *Relinquished\_Directorship* and *Riskiest\_Directorship* are as defined in previous tables. The dependent variable *Future\_Δ\_ROA* is calculated as  $ROA_{t+1} - ROA_t$ , where  $ROA_{t+1}$  ( $ROA_t$ ) is computed as operating cash-flows scaled by total assets (expressed as a %) averaged quarterly over year  $t+1$  ( $t$ ).  $\Delta\_ROA\_Industry$  is computed as  $ROA\_Industry_{t+1} - ROA\_Industry_t$ , where  $ROA\_Industry_{t+1}$  ( $ROA\_Industry_t$ ) is the average *ROA* of all companies in the firm's industry in year  $t$  (industry is defined using Fama-French 12 group classification).  $\Delta\_ROA$  is the lag value of  $\Delta\_ROA$ , namely  $ROA_t - ROA_{t-1}$ .  $\sigma\_ROA$  is the standard deviation of the firm's *ROA* over the last five years (i.e., from  $t-4$  to  $t$ ). *Log\_Assets* is the natural logarithm of total assets. *BM* is the book-to-market ratio. *Leverage* is the leverage ratio of the directorship, computed as total debt scaled by total assets. *Adj\_Return* is the market-adjusted stock return daily compounded over year  $t$ .  $t$ -statistics are adjusted for heteroskedasticity.  $p$ -values are based on standard errors clustered by year. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) respectively.

**Panel A. Departing directors' relinquished directorships**

<i>Subperiod:</i>	<i>Dep. Variable: Future_Δ ROA</i>		
	2004-2008	2009-2010	2011-2013
<i>Independent Variables:</i>	(1)	(2)	(3)
<i>Constant</i>	-5.36*** (-2.45)	-8.98*** (-3.61)	2.17*** (1.79)
<i>Riskiest_Directorship</i>	0.12 (0.31)	-1.65** (-2.31)	0.38 (0.86)
$\Delta\_ROA\_Industry$	0.31* (1.95)	0.72*** (2.80)	1.01*** (4.17)
$\Delta\_ROA$	-0.39*** (-5.65)	-0.76*** (-8.23)	-0.22*** (-2.64)
$\sigma\_ROA$	0.43*** (2.69)	0.75*** (4.16)	0.04 (0.49)
<i>Log_Assets</i>	0.29* (1.95)	0.49** (2.44)	-0.27** (-2.29)
<i>BM</i>	0.31 (0.42)	0.15 (0.59)	-0.59 (-1.31)
<i>Leverage</i>	3.23*** (3.09)	2.71 (1.41)	-0.53 (-0.42)
<i>Adj_Return</i>	-1.17 (-1.35)	-1.04** (-2.04)	-1.01 (-1.57)
$R^2$	0.33	0.78	0.13
$N$	1,361	568	1,060
Test of equality of coefficients on <i>Riskiest_Directorship</i> : (Period 2009-2010 vs other periods) $p$ -value = 0.006			

**Table 7. Changes in profitability around departures from riskiest directorships (cont'ed)**

**Panel B. Departing directors' riskiest directorships**

<i>Independent Variables:</i>	<i>Dep. Variable: Future <math>\Delta</math> ROA</i>		
	<i>Subperiod:</i> 2004-2008	2009-2010	2011-2013
	(1)	(2)	(3)
<i>Constant</i>	-3.15 (-0.87)	-6.01** (-2.04)	0.53 (0.33)
<i>Relinquished_Directorship</i>	1.29* (1.95)	-1.36* (-1.68)	0.87 (1.53)
<i><math>\Delta</math>_ROA_Industry</i>	0.79* (1.73)	0.64* (1.86)	1.03*** (4.00)
<i><math>\Delta</math>_ROA</i>	-0.40*** (-4.52)	-0.68*** (-7.27)	-0.39*** (-3.72)
<i><math>\sigma</math>_ROA</i>	0.15 (0.56)	0.68*** (3.37)	0.06 (0.62)
<i>Log_Assets</i>	0.17 (0.62)	0.26 (1.04)	-0.21 (-1.38)
<i>BM</i>	-0.20 (-0.19)	0.20 (0.91)	-0.12 (-0.42)
<i>Leverage</i>	1.95 (1.36)	0.17 (0.07)	0.71 (0.83)
<i>Adj_Return</i>	-0.34 (-0.29)	-1.31** (-2.51)	-1.25* (-1.78)
<i>R</i> <sup>2</sup>	0.18	0.65	0.20
<i>N</i>	1,266	547	1,007
Test of equality of coefficients on <i>Riskiest_Directorship</i> : (Period 2009-2010 vs other periods) <i>p-value</i> = 0.001			

**Table 8. Changes in risk-taking around departures from riskiest directorships**

This table presents an analysis of changes in risk-taking around resignations from riskiest directorships. *Riskiest\_Directorship* is defined as one if the firm is the departing director's directorship with highest *Volatility* (measured in  $t-1$ , where  $t$  is the year of departure). Panel A includes departing directors' relinquished directorships (i.e., observations coded as *Relinquished\_Directorship* = 1). Panel B includes departing directors' riskiest directorships (i.e., observations coded as *Riskiest\_Directorship* = 1). *Relinquished\_Directorship* and *Riskiest\_Directorship* are as defined in previous tables.  $\Delta\_Volatility$  is computed as  $Volatility_{t+1} - Volatility_t$ , where  $Volatility_{t+1}$  ( $Volatility_t$ ) is computed as the stock return volatility (expressed in %) measured daily over year  $t$ .  $\Delta\_R\&D$  is calculated as  $R\&D_{t+1} - R\&D_t$ , where  $R\&D_{t+1}$  ( $R\&D_t$ ) is the research and development (R&D) expense scaled by total assets (expressed in %) averaged quarterly over year  $t+1$  ( $t$ ).  $t$ -statistics are adjusted for heteroskedasticity. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) respectively.

**Panel A. Departing directors' relinquished directorships**

<i>Subsample:</i>	<i>Subperiod:</i>	2004-2008		2009-2010		2011-2013	
		$\Delta\_Volatility$	$\Delta\_R\&D$	$\Delta\_Volatility$	$\Delta\_R\&D$	$\Delta\_Volatility$	$\Delta\_R\&D$
<i>Riskiest_Directorship</i> = 1		0.57	0.10	-1.39	-0.62	-0.40	-0.07
<i>Riskiest_Directorship</i> = 0		0.44	0.003	-0.29	-0.32	-0.26	-0.02
<i>Difference</i> ( <i>t</i> -stat.)		0.13 (1.29)	0.10 (0.75)	-1.10 (-5.86)	-0.29 (-0.73)	-0.14 (-2.37)	-0.05 (-0.74)

Inter-period difference in differences. Years 2009-2010 vs other periods:  
 $\Delta\_Volatility$   $p$ -value = < 0.001  
 $\Delta\_R\&D$   $p$ -value = 0.431

**Panel B. Departing directors' riskiest directorships**

<i>Subsample:</i>	<i>Subperiod:</i>	2004-2008		2009-2010		2011-2013	
		$\Delta\_Volatility$	$\Delta\_R\&D$	$\Delta\_Volatility$	$\Delta\_R\&D$	$\Delta\_Volatility$	$\Delta\_R\&D$
<i>Relinquished_Directorship</i> = 1		0.57	0.10	-1.39	-0.62	-0.40	-0.07
<i>Relinquished_Directorship</i> = 0		0.46	0.07	-0.92	0.03	-0.27	-0.12
<i>Difference</i> ( <i>t</i> -stat.)		0.11 (1.05)	0.04 (0.23)	-0.47 (-2.22)	-0.64 (-2.23)	-0.12 (-1.59)	0.05 (0.44)

Inter-period difference in differences. Years 2009-2010 vs other periods:  
 $\Delta\_Volatility$   $p$ -value = 0.044  
 $\Delta\_R\&D$   $p$ -value = 0.027

**Table 9. Robustness**

**Panel A. Alternative measurement choices**

This table presents results of estimating directors' tendency to leave their riskiest directorships using alternative measures of the relative risk of the director's directorship portfolio. *Rank\_Volatility*, *Rank\_Size*, and *Rank\_Return* are ranks of, respectively, *Volatility*, *Size*, and *Return* using fractional ranks by director and year (*Volatility*, *Size*, and *Return* are as defined in Appendix A and measured in year *t*-1, where year *t* is the year of the departure). *Adjusted\_Volatility* is defined as *Volatility* of the directorship minus the average *Volatility* of the public directorships held by that director in that year. *Adjusted\_Size*, and *Adjusted\_Return* are defined in the same way based on *Size* and *Return*. The rest of the variables are as defined in Appendix A. *t*-statistics are based on standard errors clustered by year. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) respectively.

<i>Independent Variables:</i>	<i>Dependent Variable:</i>	
	<i>Relinquished_Directorship</i> (1)	(2)
<b><i>Directorship characteristics in relative terms:</i></b>		
<i>i) Ranking of Directorships within the portfolio:</i>		
<i>Rank_Volatility</i>	0.13*** (4.01)	
<i>Rank_Size</i>	0.03 (0.84)	
<i>Rank_Return</i>	-0.06*** (-2.78)	
<i>ii) Adjusting for portfolio mean:</i>		
<i>Adjusted_Volatility</i>		0.22** (2.13)
<i>Adjusted_Size</i>		-0.01 (-0.67)
<i>Adjusted_Return</i>		-0.07** (-2.37)
<i>Firm characteristics in absolute terms</i>	YES	YES
<i>Problems at the directorship</i>	YES	YES
<i>Economic and personal ties to the directorship</i>	YES	YES
<i>Year Fixed Effects</i>	YES	YES
<i>Industry Fixed Effects</i>	YES	YES
<i>R</i> <sup>2</sup>	0.035	0.036
<i>N</i>	7,491	7,491

**Table 9. Robustness (cont'ed)**

**Panel B. Additional controls**

<i>Independent Variables:</i>	<i>Dependent Variable: Relinquished_Directorship</i>		
	(1)	(2)	(3)
<i>Riskiest_Directorship</i>	0.07*** (3.70)	0.07*** (3.79)	0.07*** (4.93)
<b><i>Other characteristics relative to portfolio:</i></b>			
<i>Relative_Size</i>	0.03 (0.77)	0.02 (0.60)	0.01 (0.17)
<i>Relative_Return</i>	-0.03 (-1.59)	-0.04** (-2.13)	-0.06*** (-2.78)
<i>Relative_Leverage</i>	0.07 (1.58)	0.06 (1.40)	0.09** (2.01)
<i>Relative_BM</i>	0.18*** (4.91)	0.17*** (5.03)	0.18*** (5.20)
<i>Relative_ROA</i>	-0.03 (-0.89)	-0.04 (-1.31)	-0.01 (-0.25)
<i>Relative_Equity_Holdings</i>		0.02 (0.30)	0.00 (-0.04)
<i>Relative_Compensation</i>		-0.05 (-1.24)	-0.05 (-1.25)
<i>Relative_Tenure</i>		0.22*** (4.65)	0.22*** (4.44)
<b><i>Governance characteristics:</i></b>			
<i>Pct_Independent</i>			0.11** (2.13)
<i>Chair_Insider</i>			0.06*** (5.51)
<i>Staggered</i>			-0.02 (-1.63)
<i>Directors_Holdings</i>			-0.17 (-1.33)
<i>Pct_Institutions</i>			-0.03 (-0.83)
<i>Firm characteristics in absolute terms</i>	YES	YES	YES
<i>Problems at the directorship</i>	YES	YES	YES
<i>Economic and personal ties to the directorship</i>	YES	YES	YES
<i>Year Fixed Effects</i>	YES	YES	YES
<i>Industry Fixed Effects</i>	YES	YES	YES
<i>R<sup>2</sup></i>	0.048	0.059	0.064
<i>N</i>	7,491	7,491	6,491

**Table 10. Alternative Explanation: Running Ahead of Trouble?**

This table presents results of estimating directors' tendency to leave their riskiest directorships controlling for the possibility that directors leave the directorship because of undisclosed problems. *Future\_Return* is the market-adjusted stock return compounded daily over year  $t+1$  ( $t$  is the year of departure). *Future\_Δ\_ROA* is computed as  $ROA_{t+1} - ROA_t$ , where  $ROA_{t+1}$  ( $ROA_t$ ) is defined as operating cash-flows scaled by total assets (expressed as a %) averaged quarterly over year  $t+1$  ( $t$ ). *Future\_Negative\_Return* equals one if *Future\_Return* < 0, and zero otherwise. Similarly, *Future\_ROA\_Decrease* equals one if *Future\_Δ\_ROA* < 0, and zero otherwise. *Future\_Litigation* equals one if the firm is subject to shareholder litigation in year  $t+1$ , and zero otherwise. The rest of the variables are as defined in Appendix A.  $t$ -statistics are based on standard errors clustered by year. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail) respectively

<i>Independent Variables:</i>	<i>Full sample</i>		<i>Restricted samples</i>		
	(1)	(2)	<i>Future_Return</i> <0	<i>Future_Δ_ROA</i> <0	<i>Future_Litigation</i>
<i>Riskiest_Directorship</i>	0.08*** (4.43)	0.08*** (4.45)	0.07** (2.25)	0.07*** (2.60)	0.07*** (3.21)
<i>Measures of future trouble:</i>					
<i>Future_Return</i>	0.66 (0.95)				
<i>Future_Δ_ROA</i>	0.13*** (8.73)				
<i>Future_Negative_Return</i>		0.01 (0.56)			
<i>Future_ROA_Decrease</i>		0.00 (0.18)			
<i>Future_Litigation</i>	0.00 (0.03)	0.00 (-0.05)			
<i>Other firm characteristics in relative terms</i>	YES	YES	YES	YES	YES
<i>Firm characteristics in absolute terms</i>	YES	YES	YES	YES	YES
<i>Problems at the directorship</i>	YES	YES	YES	YES	YES
<i>Economic and personal ties to the directorship</i>	YES	YES	YES	YES	YES
<i>Year Fixed Effects</i>	YES	YES	YES	YES	YES
<i>Industry Fixed Effects</i>	YES	YES	YES	YES	YES
$R^2$	0.038	0.037	0.029	0.025	0.046
$N$	7,491	7,491	3,834	3,733	1,312